1. (Amended) A method for providing a β_2-adrenergic receptor (β_2AR) to airway epithelial cells, airway smooth muscle cells or a combination thereof, of a human subject comprising:

C1 (a) administering via airway treatment to at least one cell type selected from the group consisting of airway epithelial cells, airway smooth muscle cells and a combination thereof of a human subject, a first composition comprising a vector comprising a DNA sequence encoding a β_2AR operably linked to a promoter that is functional in at least one of said cells of said subject, under conditions whereby the DNA sequence encoding said β_2AR is expressed in at least one of said cells.

3. (Amended) The method of claims 1, wherein said promoter is an inducible promoter, and said method further comprises:

C2 (b) administering via airway treatment a second composition comprising a hormone or pharmacological agent that induces said promoter to express said β_2AR in at least one of said cells.

4. (Amended) The method of claims 1, wherein said method further comprises:

(b) administering via airway treatment a second composition comprising at least one β_2-adrenergic agonist to said cells of said subject.

5. (Amended) The method of claim 4, wherein said promoter is an inducible promoter, said method further comprises:

(c) administering via airway treatment a third composition comprising a hormone or pharmacological agent that induces said promoter to express said β_2AR in at least one of said cells.

8. (Amended) A method of treating a human subject having airway [or vascular] disease comprising:

C3 (a) administering via airway treatment to at least one cell type selected from the group consisting of airway epithelial cells, airway smooth muscle cells and and a combination thereof, a first composition comprising a vector comprising a DNA sequence encoding a β_2AR operably linked to a promoter that is functional in at least one of said cells

of said subject, under conditions whereby the DNA sequence encoding said β_2AR is expressed in at least one of said cells; and

(b) administering via airway treatment a second composition comprising at least one β_2-adrenergic agonist into said cells of said subject.

c3

9. (Amended) The method of claim 8 wherein said cell is an airway epithelial cell.

18. (Amended) The method of claim 17, wherein said method further

c4

comprises:

(c) administering via airway treatment a composition comprising a hormone or pharmacological agent that induces said promoter to express said β_2AR in at least one of said cells.

c5

20. (Amended) The method of claims 1, wherein said first composition further comprises a pharmaceutically acceptable carrier for aerosol delivery.

30. (Amended) A pharmaceutical composition comprising a vector comprising a DNA sequence encoding a β_2AR operably linked to a promoter that is functional in at least

c6

one cell of the airways of a human subject, wherein said cell is selected from the group consisting of an airway epithelial cells, airway smooth muscle cells and a combination thereof; and a pharmaceutically acceptable carrier, wherein said pharmaceutical composition is suitable for airway delivery to said subject.

32. (Amended) The pharmaceutical composition of claims 30, wherein said pharmaceutical composition is suitable for aerosol delivery.

33. (Amended) A kit for the treatment of a human subject having airway disease

c7

comprising:

(a) a first pharmaceutical composition comprising a vector comprising a DNA sequence encoding a β_2AR operably linked to a promoter that is functional in at least one cell of the airways of a human subject, wherein said cell is selected from the group consisting of an airway epithelial cells, airway smooth muscle cells and a combination

thereof; and a pharmaceutically acceptable carrier, wherein said first pharmaceutical composition is suitable for airway delivery to said subject; and

C7 Cont

(b) a second pharmaceutical composition comprising at least one β_2-adrenergic agonist and a pharmaceutically acceptable carrier, wherein said second pharmaceutical composition is suitable for airway delivery to said subject.

35. (Amended) The kit of claim 33, , wherein said promoter is an inducible promoter, said kit further comprises:

C8

(c) a third pharmaceutical composition comprising a hormone or pharmacological agent that induces said promoter to express said β_2AR in at least one of said cells, wherein said third pharmaceutical composition is suitable for airway delivery to said subject.

38. (Amended) A kit for the treatment of a human subject having airway [or vascular] disease comprising:

C9

(a) a first pharmaceutical composition comprising a vector comprising a DNA sequence encoding a β_2AR operably linked to a promoter that is functional in at least one cell of the airways of a human subject, wherein said cell is selected from the group consisting of an airway epithelial cells, airway smooth muscle cells and a combination thereof; and a pharmaceutically acceptable carrier; and

(b) a second pharmaceutical composition comprising a hormone or pharmacological agent that induces said promoter to express said β_2AR in at least one of said cells, wherein said first and second pharmaceutical compositions are suitable for airway delivery to said subject.

44. (Amended) The method of claim 3, wherein said promoter is a mammalian cell specific promoter selected from the group consisting of an epithelial cell specific promoter, an endothelial cell specific promoter and a smooth muscle cell specific promoter.

C10

45. (Amended) The method of claim 5, wherein said promoter is a mammalian cell specific promoter selected from the group consisting of an epithelial cell specific promoter, an endothelial cell specific promoter and a smooth muscle cell specific promoter.

46 (Amended) The pharmaceutical composition of claim 30, wherein said promoter is a mammalian cell specific promoter selected from the group consisting of an epithelial cell specific promoter, an endothelial cell specific promoter and a smooth muscle cell specific promoter.

47. (Amended) The kit of claim 35, wherein said promoter is a mammalian cell specific promoter selected from the group consisting of an epithelial cell specific promoter, an endothelial cell specific promoter and a smooth muscle cell specific promoter.

48. (Amended) The kit of claim 38, wherein said promoter is a mammalian cell specific promoter selected from the group consisting of an epithelial cell specific promoter, an endothelial cell specific promoter and a smooth muscle cell specific promoter.

49. (Amended) A kit for the treatment of a human subject having airway [or vascular] disease comprising:

a first pharmaceutical composition comprising a vector comprising a DNA sequence encoding a β_2AR operably linked to a promoter that is functional in at least one cell of the airways of a human subject, wherein said cell is selected from the group consisting of an airway epithelial cells, airway smooth muscle cells and a combination thereof; and a pharmaceutically acceptable carrier;

a second pharmaceutical composition comprising at least one β_2-adrenergic agonist and a pharmaceutically acceptable carrier; and

a third pharmaceutical composition comprising a hormone or pharmacological agent that induces said promoter to express said β_2AR in at least one of said cells, wherein said first, second and third pharmaceutical compositions are suitable for airway delivery to said subject.

50. (Amended) The kit of claim 49, wherein said promoter is a mammalian cell specific promoter selected from the group consisting of an epithelial cell specific promoter, an endothelial cell specific promoter and a smooth muscle cell specific promoter.

Kindly add the following claims:

51. (New) The method of claim 27, wherein said modified β_2AR possesses at least one property selected from the group consisting of increased responsiveness to β_2AR agonists, increased affinity to β_2-adrenergic agonists, and capability to increase the potency of β_2AR agonists to stimulate downstream signal transduction pathways, as compared to the native β_2AR.

52. (New) The method of claim 51, wherein said modified β_2AR is modified from the native β_2AR by the deletion of amino acids, substitution of amino acids, replacement of amino acids or a combination thereof.

C11

53. (New) The method of claim 31, wherein said modified β_2AR possesses at least one property selected from the group consisting of increased responsiveness to β_2AR agonists, increased affinity to β_2-adrenergic agonists, and capability to increase the potency of β_2AR agonists to stimulate downstream signal transduction pathways, as compared to the native β_2AR.

54. (New) The method of claim 53, wherein said modified β_2AR is modified from the native β_2AR by the deletion of amino acids, substitution of amino acids, replacement of amino acids or a combination thereof.

55. (New) The method of claim 1, wherein said subject is afflicted with asthma.

56. (New) The method of claim 8, wherein said airway disease is asthma.

57. (New) The method of claim 18, wherein said airway disease is asthma.